

# Good intents, but low impacts

**Diverging importance of motivational and socio-economic determinants explaining pro-environmental behavior, energy use, and carbon footprint**

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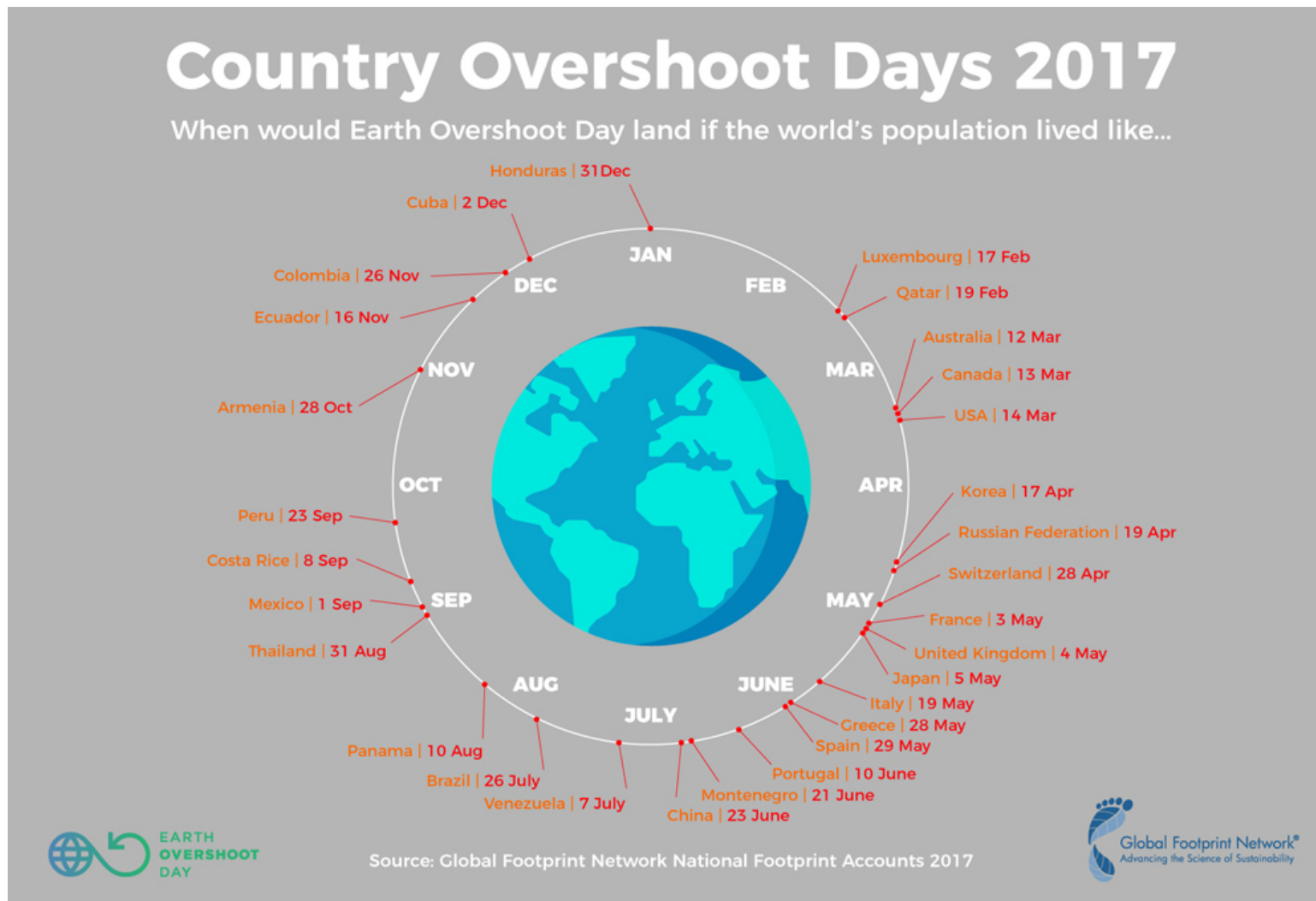
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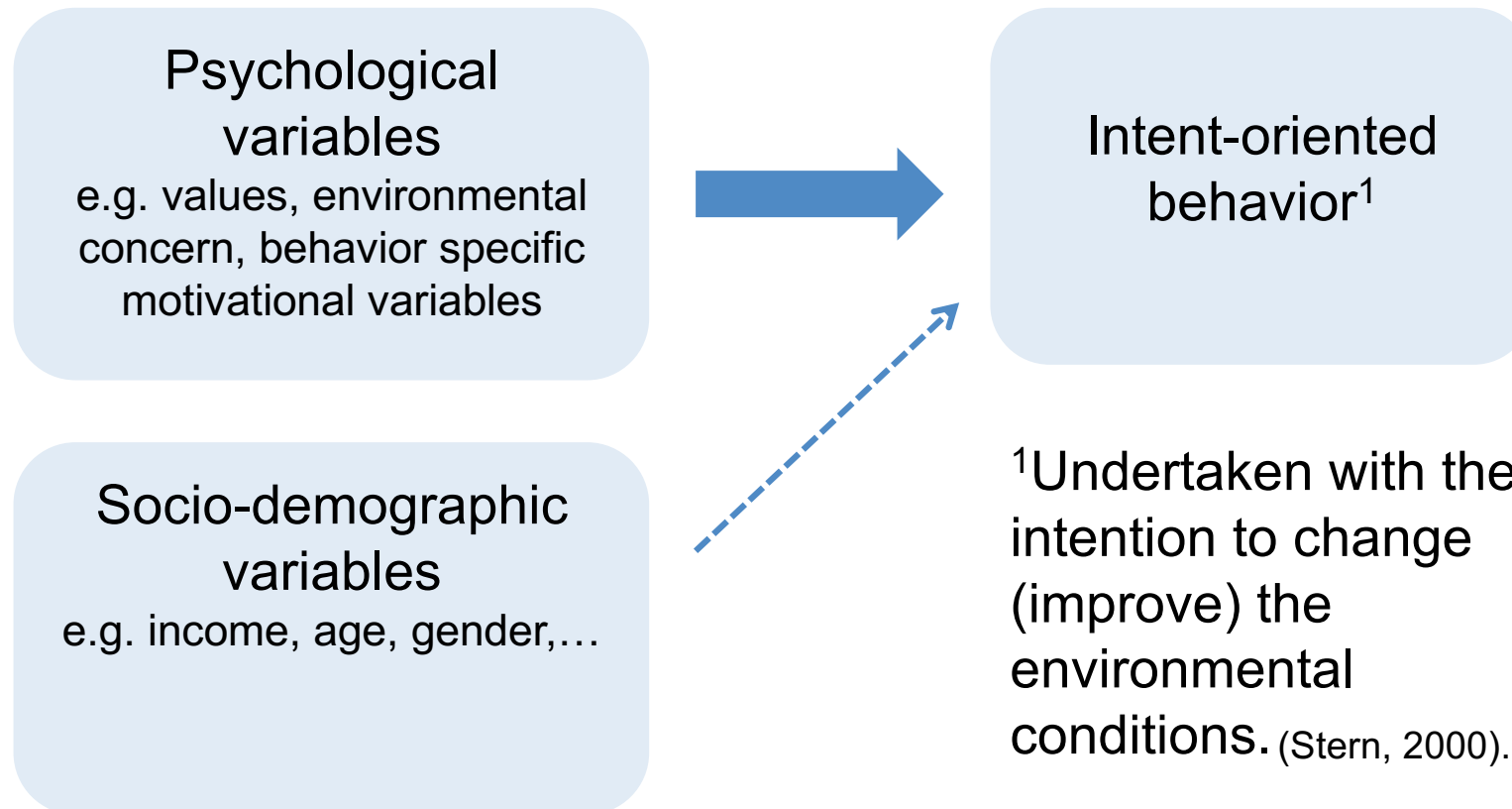
**Symposium ,Take a walk on the green side! Predicting pro-environmental attitudes and behaviors'**

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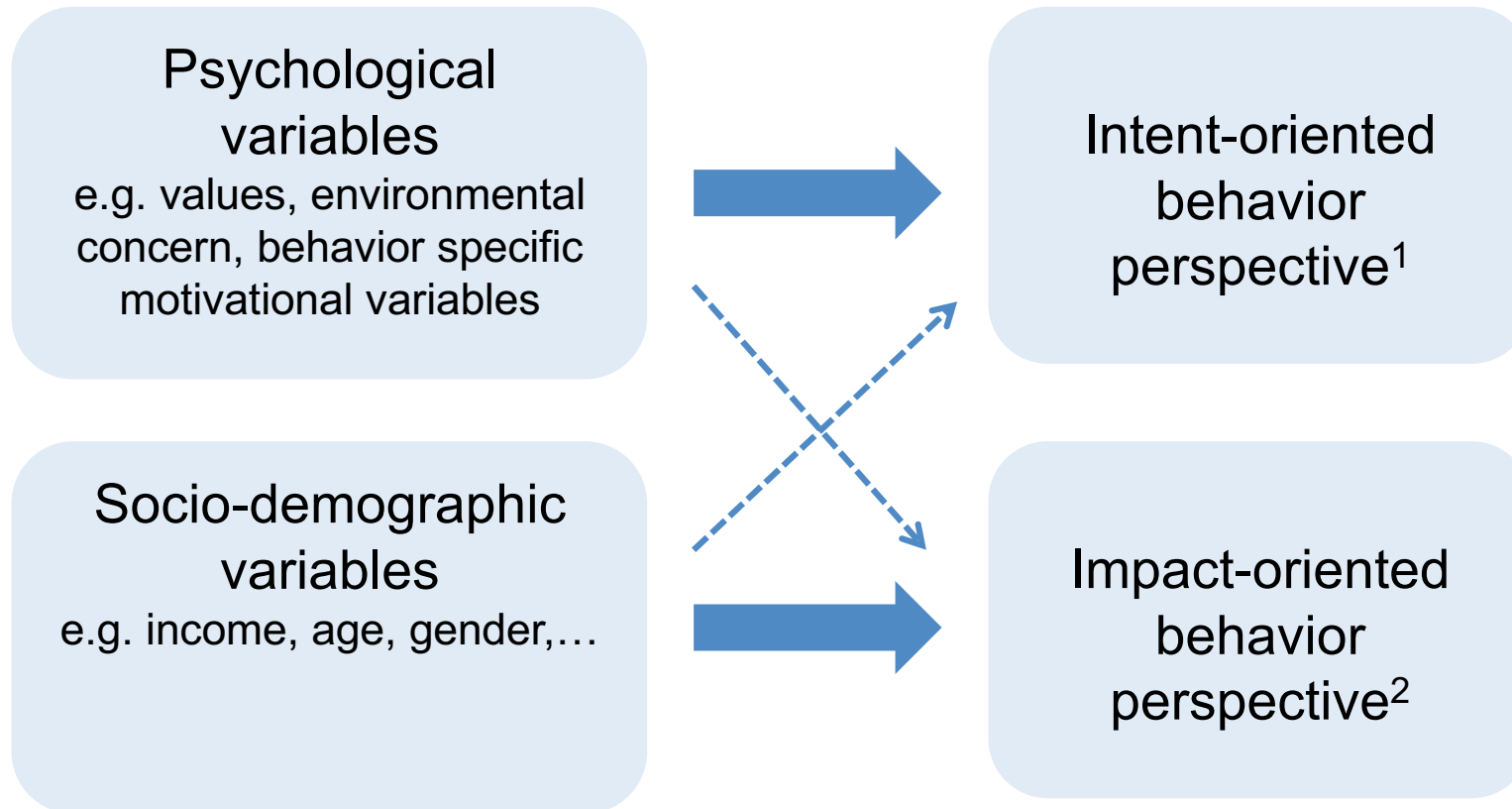
# Ongoing trend of over-consumption of natural resources



# Diverging determinants of intent-oriented and impact-oriented behavior



# Diverging determinants under an intent-oriented or impact-oriented behavior perspective



<sup>2</sup>Extent to which the availability of materials or energy from the environment is changed, or the structure and dynamics of ecosystems or the biosphere is altered (Stern, 2000).

# The Present Study

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## Overall Aim:

Describe and explain individual differences in the consumption of natural resources (in particular energy use and greenhouse gas emissions).

## Aim of this Study:

Explore the diverging insights that emerge from the intent-oriented and impact-oriented research perspectives vis-à-vis environmentally significant behavior.

- ⇒ Does environmental self-identity explain variance not only in intent-oriented behavior, but also in impact-oriented behavior over and above socio-demographic characteristics?
  - Environmental self-identity (Gatersleben, et al., 2012; Van der Werff et. al. 2013; Whitmarsh & O'Neill, 2010)

## Method: Survey Procedure

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- > March / April 2014
- > By a Market Research Institute (GfK)
- > Face-to-face interviews with CAPI (Computer Assisted Personal Interview) ~ 45min
- > German speaking residents > 18 years
- > Recruitment within an existing participant pool stratified for age, gender, household size, based on national proportions.

# Method: Sample Characteristics

N = 1'012

	Characteristics	M	SD	%
<i>Slightly under represented: High incomes</i>	Age in years	49.8	17.6	
	Net monthly per capita income in € (income)	1,186.7	624.3	
	Number of household members	2.5	1.2	
<i>Slightly over represented: Medium incomes</i>	Gender			
	Male			49.1
	Female			50.9
<i>Slightly under represented: Higher education</i>	Highest education level completed (education)			
	Secondary school			39.5
	Intermediate school			32.7
	Higher education entrance qualification			20.7
	Higher education			5.6
	Missing			1.5
<i>Slightly over represented: Low and medium education</i>	Home ownership			
	Rental			72.2
	Owens home			27.8
	Residential area			
	Urban			59.2
	Rural			40.8

(Moser & Kleinhüchelkotten, 2017, Table 1)

# Method: Measures

	Impact	Intent
Overall	<ul style="list-style-type: none"> <li>Overall energy use (kWh/a)</li> <li>Carbon footprint (kgCO<sub>2</sub>e/a)</li> </ul>	<ul style="list-style-type: none"> <li>Self-reported pro-environmental behavior (two items, <math>\alpha = .76</math>)</li> </ul>
Housing	<ul style="list-style-type: none"> <li>Living space (m<sup>2</sup>)</li> <li>Number of energy-consuming appliances</li> </ul>	<ul style="list-style-type: none"> <li>Number of energy-efficient appliances</li> </ul>
Food	<ul style="list-style-type: none"> <li>Meat consumption</li> </ul>	<ul style="list-style-type: none"> <li>Importance of organic food</li> </ul>
Mobility	<ul style="list-style-type: none"> <li>Distance in passenger car (km/a)</li> <li>Distance vacation trip (km)</li> </ul>	-

Socio-demographics	Psychological
Age, Gender, Education, Income, Household size, Home ownership,	<ul style="list-style-type: none"> <li>Environmental self-identity (two items, <math>\alpha = .74</math>)</li> </ul>



# Predicting impact-oriented vs. intent-oriented behavior I

	Pro-environmental behavior			Overall energy use (kWh/a)			Carbon footprint (kgCO <sub>2</sub> e/a)		
	B	SE	β	B	SE	β	B	SE	β
Constant	1.10	0.16		4.17	0.05		3.68	0.05	
Age	0.00	0.00	.00	0.00	0.00	-.12**	0.00	0.00	-.13***
Gender (male = 0)	-0.05	0.04	-.03	-0.06	0.01	-.13***	-0.06	0.01	-.16***
Education	-0.04	0.03	-.04	0.00	0.01	-.02	0.00	0.01	.00
Income	0.00	0.00	-.01	0.00	0.00	.25***	0.00	0.00	.27***
Number of household members	-0.01	0.03	-.01	-0.02	0.01	-.10*	-0.02	0.01	-.09*
Owns home (rental = 0)	-0.07	0.05	-.03	0.10	0.02	.22***	0.08	0.01	.19***
Urban vs. rural region	0.07	0.04	.04	0.00	0.01	.01	0.00	0.01	-.01
Environmental self-identity	0.66	0.02	.70***	-0.02	0.01	-.09**	-0.02	0.01	-.08**
R <sup>2</sup> /R <sup>2</sup> adj		.52/.51			.19/.19			.20/.19	
F		123.03***			27.46***			28.97***	
N		934			935			935	

(Moser & Kleinhüchelkotten, 2017, Table 3)

SI & PEB: low values = high SI /PEB

OE & CF: low values = low impact

# Predicting impact-oriented vs. intent-oriented behavior II

	Living space (m <sup>2</sup> )			Household appliances (kWh/a)			Energy-efficient appliances		
	B	SE	β	B	SE	β	B	SE	β
Constant	1.63	0.03		3.00	0.05		1.50	0.20	
Age	0.00	0.00	.10***	-.00	0.00	-.09*	-.01	0.00	-.18***
Gender (male = 0)	0.01	0.01	.03	.00	0.01	.00	.14	0.05	.08**
Education	0.01	0.00	.03	-.02	0.01	-.09**	-.02	0.03	-.02
Income	0.00	0.00	.21***	.00	0.00	.09*	.00	0.00	.21***
Number of household members	-0.09	0.00	-.58***	-.08	0.01	-.42***	-.16	0.03	-.22***
Owens home (rental = 0)	0.15	0.01	.37***	.01	0.02	.02	.30	0.06	.16***
Urban vs. rural region	0.01	0.01	.02	-.00	0.01	-.01	-.06	0.05	-.03
Environmental self-identity	-0.01	0.00	-.04*	-.03	0.01	-.13***	-.13	0.03	-.15***
R <sup>2</sup> /R <sup>2</sup> adj		.65/.64			.22/.21			.19/.18	
F		209.10***			32.79***			25.06***	
N		927			935			892	

(Moser & Kleinhüchelkotten, 2017, Table 4)

SI: low values = high SI

LS & HA: low values = low impact

EEA: low values = low impact

# Predicting impact-oriented vs. intent-oriented behavior III

	Meat consumption			Organic foods			Car trips (km/a)			Vacation trips (km)		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Constant	3.26	0.22		2.73	0.17		0.83	0.42		3.56	0.44	
Age	0.00	0.00	.02	0.00	0.00	-.04	-0.01	0.00	-.10**	0.00	0.00	-.05
Gender (male = 0)	0.59	0.06	.32***	-0.21	0.04	-.14***	-0.58	0.11	-.15***	0.04	0.11	.02
Education	-0.02	0.04	-.02	-0.11	0.03	-.13***	-0.13	0.07	-.06	0.02	0.07	.02
Income	0.00	0.00	-.04	0.00	0.00	-.05	0.00	0.00	.43***	0.00	0.00	.41***
Number of household members	-0.07	0.03	-.09*	-0.04	0.03	-.05	0.84	0.07	.48***	0.20	0.07	.17**
Owns home (rental = 0)	-0.01	0.07	-.01	-0.24	0.05	-.14***	0.42	0.14	.10**	0.19	0.13	.07
Urban vs. rural region	0.08	0.06	.04	-0.08	0.04	-.05	0.32	0.11	.08**	-0.24	0.11	-.09*
Environmental self-identity	-0.09	0.03	-.09**	0.32	0.02	.39***	-0.22	0.06	-.11***	0.04	0.06	.03
R <sup>2</sup> /R <sup>2</sup> adj	.13/.12			.27/.26			.34/.33			.15/.14		
F	16.97***			42.90***			55.56***			10.23***		
N	934			475			934			475		

(Moser & Kleinhüchelkotten, 2017, Table 5)

SI & OF: low values = high SI & OF

MC: low values = high impact

CT & VT: low values = low impact

# Discussion

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In sum we found ...

- Environmental self-identity predicts intent-oriented behaviors (PEB, EE appliances, organic food)
- But plays an ambiguous role in explaining the environmental impact of a person
- Income plays the major role in predicting environmental impact, but is not the only relevant socio-demographic predictor

⇒ Good intents but low impacts:  
Pro-environmentally motivated people try to reduce their energy consumption and greenhouse gas emissions but they remain with low impact behaviors.

# Discussion

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⇒ Pro-environmentally motivated people try to reduce their energy consumption and greenhouse gas emissions but they remain with low impact behaviors.

## Potential explanations:

- > Lacking knowledge about the impacts of environmentally-friendly behavior => wrong decisions? (Csutora, 2012)
- > Psychological variables => easy behaviors, structural factors => difficult behaviors (Whitmarsh, 2009)
- > Going together of materialistic beliefs and environmental concern (Gatersleben et al. 2010)
  - ⇒ efficiency, but no sufficiency measures?
  - ⇒ Individuals' pro-environmental motivation is overridden by the overall effect of various consumption options that open up with higher socioeconomic status.

# Implications

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- > Does environmental-psychological research focus on the relevant behaviors?
- > Does environmental-psychological research focus on the relevant target groups?
- > Which theories and concepts help us to go beyond single behavior and rather investigate / changing lifestyle patterns?
- > How may western living standards / subjective well-being be decoupled from environmental impact?

# Thank you for your attention!

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For questions and comments:  
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## Publications:

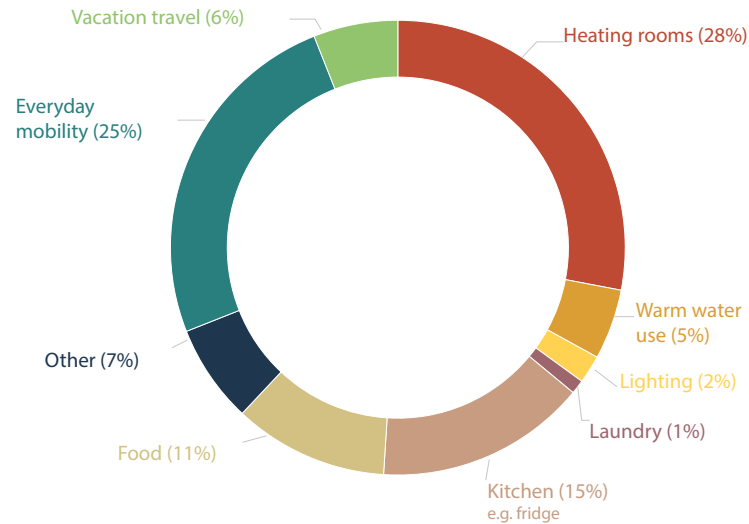
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- > Moser, S., & Kleinhüchelkotten, S. (2017). Good Intents, but Low Impacts: Diverging Importance of Motivational and Socioeconomic Determinants Explaining Pro-Environmental Behavior, Energy Use, and Carbon Footprint. *Environment and Behavior*, DOI:10.1177/0013916517710685
- > Moser, S., Lannen, A., Kleinhüchelkotten, S., Neitzke, H. P., & Bilharz, M. (2016). *Good intentions, big footprints: Facing household energy use in rich countries* (CDE Policy Brief No.9). Bern: CDE.

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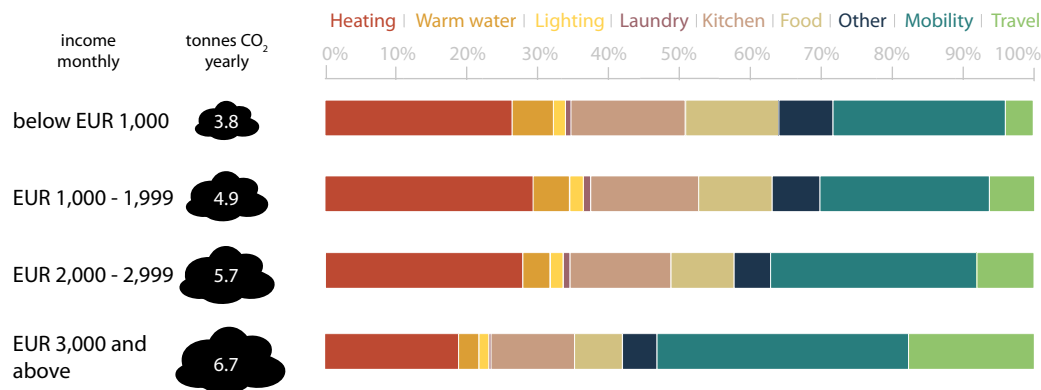
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# Overall Consumption

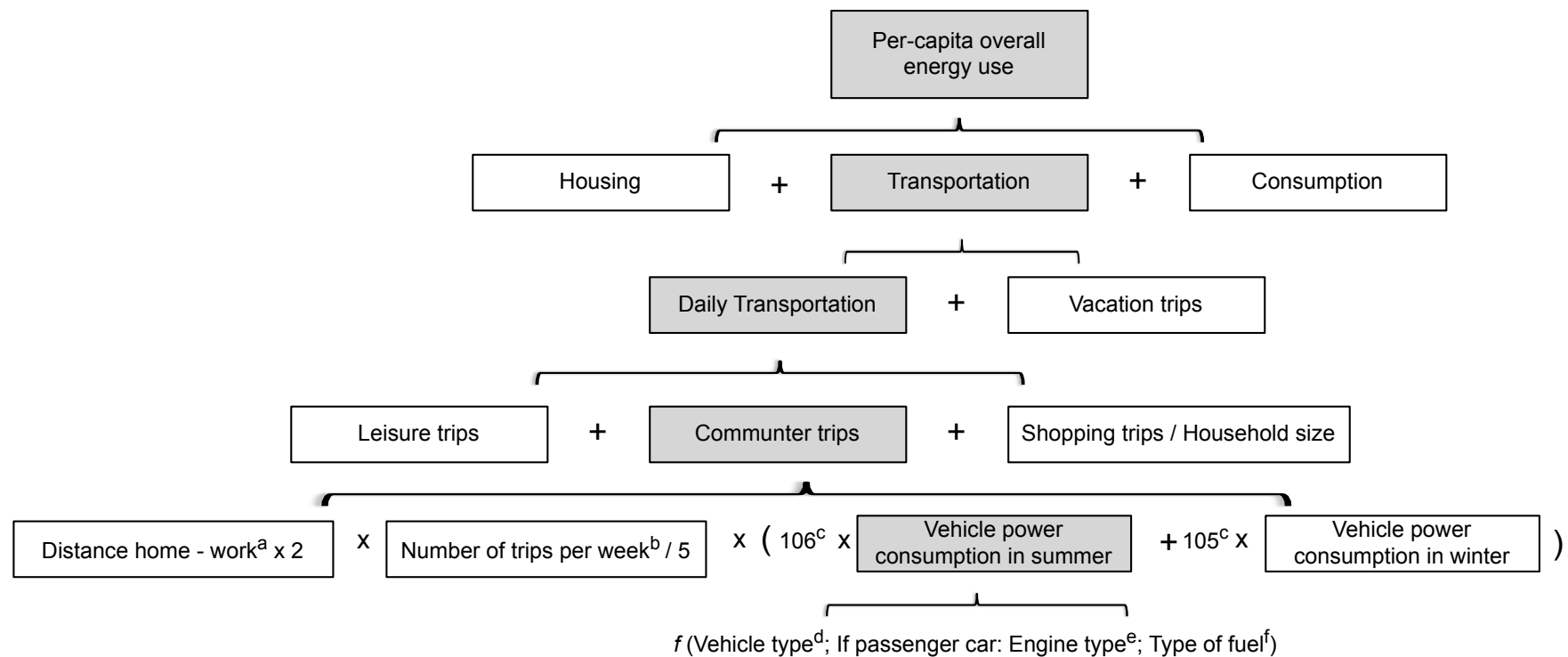


Contribution of different consumption areas to annual per capita CO<sub>2</sub> emissions (Moser, et al., 2016, Fig.1)



Per capita CO<sub>2</sub> emissions and consumption area shares according to income groups (Moser, et al., 2016, Fig.2)

# Assessment and calculation of overall energy use (example)



(Moser & Kleinhüchelkotten, 2017, Online Appendix)

# Assessment of PEB and SI

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## Pro-environmental behavior

- > “I organize my daily life so as to use as few natural resources as possible”
- > “I even try to use as few natural resources as possible when it requires substantial extra costs and effort”

## Environmental self-identity

- > “I think of myself as a consumer who cares about saving natural resources”
- > “A resource-saving lifestyle is an important part of who I am”

5-point scale, ranging from 1 = “I totally agree” to 5 = “I totally disagree”

# Interaction between Income and SI

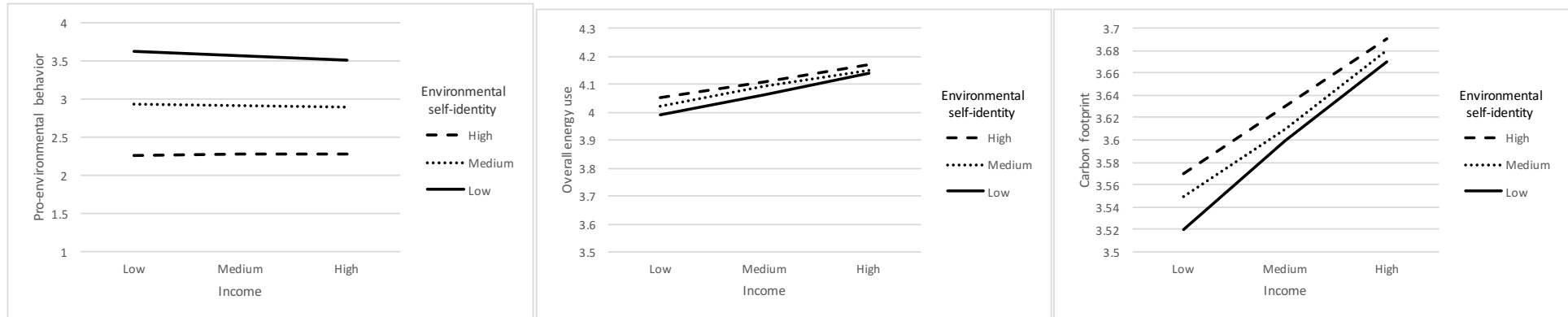


Table C1: Linear models predicting pro-environmental behavior, overall energy use, and carbon footprint (moderation analysis)

	Pro-environmental behavior				Overall energy use (kWh/a)				Carbon footprint (kgCO <sub>2</sub> e/a)			
	B	S.E.	t	p	B	S.E.	t	p	B	S.E.	t	p
Constant	2.92	.02	140.21	.000	4.09	.01	629.63	.000	3.61	.01	608.57	.000
Env. Self-identity (centered)	.68	.02	29.65	.000	-.02	.01	-3.49	.001	-.02	.01	-3.08	.002
Income (centered)	.00	.00	-1.03	.306	.00	.00	9.06	.000	.00	.00	9.76	.000
Income x Env. Self-identity	-.00	.00	-1.49	.138	.00	.00	.90	.364	.00	.00	1.27	.205
R <sup>2</sup>	.51				.13				.14			
N	945				946				946			

Notes. Due to their skewed distribution, overall energy use and carbon footprint were log-transformed.

(Moser & Kleinhüchelkotten, 2017, Online Appendix)